

Gastrointestinal Bleeding from Metastatic Prostate Adenocarcinoma to the Stomach

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ABSTRACT

We present a rare case of gastrointestinal (GI) bleeding associated with metastatic prostate adenocarcinoma to the stomach. Prostate cancer, which is the most common noncutaneous malignancy among men, rarely spreads to the stomach, with only 7 cases reported in the English literature. Symptoms may include abdominal pain, nausea, vomiting, and GI bleeding. Our patient was treated with epinephrine injection and bipolar cautery, but GI bleeding recurred 7 months later when he had worsening of his thrombocytopenia while using ibuprofen.

INTRODUCTION

Hemorrhage is common in advanced cancer, occurring in up to 10% of patients with varying causes, including chemotherapy, radiotherapy, anticoagulants, surgery, disseminated intravascular coagulation, and abnormalities in platelet number and functioning.^{1,2} Malignant lesions, although frequently associated with oozing and chronic gastrointestinal (GI) blood loss, are an uncommon cause of acute upper GI bleeding, accounting for less than 5% of acute bleeding episodes.^{3,4}

CASE REPORT

A 51-year-old man presented to the emergency department for coffee-ground emesis and melena. He had a history of castration-resistant prostate adenocarcinoma diagnosed 7 years earlier, with metastases to his thoracic spine, ribs, and left femur. He had received radiation to his thoracic spine and was on medical therapy with leuprolide and denosumab, a human monoclonal antibody against RANKL that inhibits bone destruction in patients with castration-resistant prostate cancer and bone metastases.⁵ A bone-marrow biopsy performed 2 months earlier for pancytopenia following treatment with cabazitaxel showed diffuse bone-marrow replacement with prostate adenocarcinoma. His medications included 20 mg omeprazole daily. He had a sleeve gastrectomy for obesity 10 years earlier. At presentation, his vital signs were stable, and he had pale conjunctiva. His white blood cell count was 1.0×10^9 cells/L, hemoglobin 7.6 g/dL, and platelet count 54×10^9 /L. His prostate-specific antigen measured 2 weeks earlier was $>4,500$ ng/mL.

Upper endoscopy revealed a mucosal nodule in the gastric body 1 cm in diameter with active bleeding (Figure 1). The nodule was biopsied for histology with a cold forceps and felt firm. The nodule was injected with epinephrine and cauterized with a bipolar probe, and hemostasis was obtained (Figure 2). Following upper endoscopy, the patient's hemoglobin level remained stable, and he was discharged the next day with a scheduled follow-up with oncology. The biopsy revealed high-grade prostate adenocarcinoma (Figure 3).

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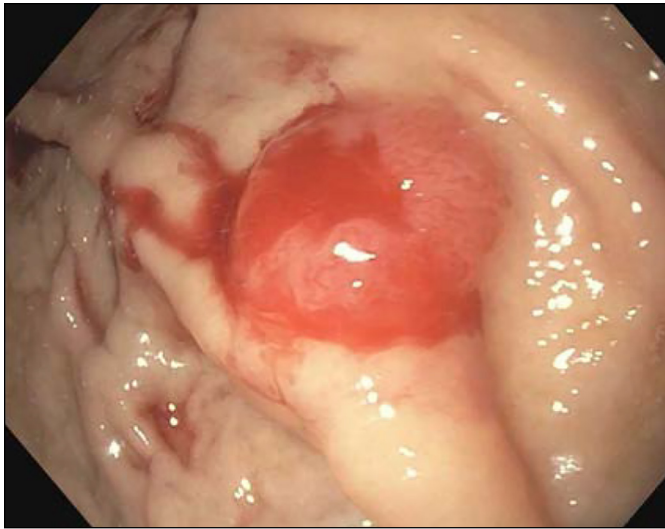


Figure 1. Endoscopy of a 1-cm nodule in the gastric body with active bleeding.

The patient presented 7 months later with a second episode of coffee-ground emesis and melena while taking 800 mg ibuprofen daily for pain. His hemoglobin was 8.9 g/dL, and platelet count was $23 \times 10^9/L$. Disseminated intravascular coagulation was ruled out with a normal prothrombin time, activated partial thromboplastin time, and fibrinogen level with no evidence of fibrin monomers. His clinical course was complicated by the spread of prostate adenocarcinoma to the lungs with recurrent malignant pleural effusions and oxygen dependence. Given his recurrent bleeding and widespread metastases, he was treated supportively with platelet transfusion, intravenous proton pump inhibitor, and desmopressin with control of bleeding.



Figure 2. The gastric nodule with resolution of bleeding after injection with epinephrine and cauterization with a bipolar probe.

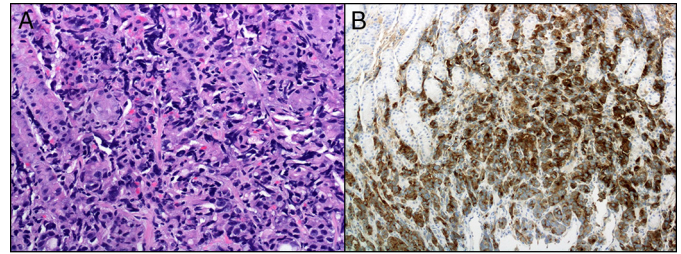


Figure 3. (A) Hematoxylin and eosin stain of the stomach biopsy demonstrating hyperchromatic, individual malignant cells infiltrating between benign-appearing gastric glands. (B) Immunohistochemical stain for prostate-specific antigen under 100x magnification highlighting the malignant cells (brown), while the benign gastric glands are unstained.

DISCUSSION

Prostate cancer is the most common noncutaneous malignancy among men and generally has an indolent course. The lymph nodes and bone are the most common sites of metastatic disease, and the lungs and liver are the most common sites of visceral metastases.⁶ Metastatic prostate cancer to the stomach, as found in our patient, is rare. The most common malignancies to metastasize to the stomach include lung, breast, and esophageal cancer.⁷ In a post-mortem study of solid malignant tumors, the incidence of gastric metastases in patients with prostate cancer was estimated at 2.5%.⁷ Nausea, vomiting, abdominal pain, and GI bleeding are the most common presenting symptoms.⁸

A recent case report cited only 7 cases of metastatic prostate cancer to the stomach in the English literature, including itself.⁸ Six of the patients were known to have prostate cancer prior to the diagnosis of gastric metastases, and prostate cancer was diagnosed in one patient after upper endoscopy with biopsy and confirmation on immunohistochemical staining.⁸⁻¹³ Although rare, metastases to other sites in the GI tract, such as the small bowel and esophagus, have been reported.^{14,15} The exact mechanism of GI metastasis is unclear, but it may include lymphatic, hematogenous, and direct spread.⁸

Our patient was known to have widespread metastases of prostate cancer to his axial and appendicular skeleton, with no known visceral metastases at the time of his initial episode of GI bleeding. The median survival of patients with bone and visceral metastases is 14 months, compared to patients with isolated lymph node (43 months) or bone (24 months) involvement.⁶ The patient's initial presentation was concerning for peptic ulcer disease induced by nonsteroidal anti-inflammatory drug use. In patients with metastatic prostate cancer who present with symptoms of GI bleeding, gastric metastases should be considered as an etiology.

Despite extensive literature on the etiology and management of upper GI bleeding in the general population, an understanding of the disease course and management in patients

with cancer remains limited.¹⁶ Endoscopic therapy is generally effective for initial hemostasis of malignant lesions, but rebleeding is common and occurs in up to 80% of patients with poor survival.^{3,16} Endoscopic therapies include argon-plasma coagulation, laser, heater probe, and injection, although no gold-standard treatment has been established.¹⁶ The role of endoscopic ultrasound (EUS) in the treatment of GI bleeding is rapidly evolving and may be a therapeutic option in patients with severe nonvariceal GI bleeding including malignancies, who are unsuitable candidates for other interventions. In a study of 17 patients with severe refractory GI bleeding, 7 out of 8 patients with a malignant etiology had successful EUS-guided therapeutic intervention with no rebleeding at a median follow-up of 10 months. The patient with rebleeding had rectally invasive prostate cancer with continued daily bleeding despite a marked decrease in vessel flow on EUS after alcohol injection.¹⁷

Desmopressin, an analogue of vasopressin, has been successfully used in the prevention and treatment of bleeding associated with uremia, cirrhosis, and medication-induced platelet dysfunction, although there are no clear guidelines for use in these settings.^{18,19} Ibuprofen is associated with platelet dysfunction.²⁰ Although not formally indicated, desmopressin was administered to our patient in the setting of severe GI bleeding and daily ibuprofen use.

DISCLOSURES

Author contributions: All authors critically revised the manuscript for intellectual content and approved the final version. A. Koop and B. Brauhmbhatt wrote the manuscript. A. Koop and J. Lewis provided the images. A. Koop is the article guarantor.

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